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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/612,434 | 07/02/2003 | Alan Wu | 60680-705 | 6546 |

7590 05/24/2005

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EXAMINER

FLANIGAN, ALLEN J

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
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3753

DATE MAILED: 05/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/612,434

Applicant(s)

WU ET AL.

Examiner

Allen J. Flanigan

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,6,9,12 and 20 is/are rejected.
- 7) ☒ Claim(s) 2,5,7,8,10,11,13-19,21 and 22 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 20 is rejected under 35 U.S.C. 102(b) as being anticipated by Berkowitz et al.

Berkowitz et al. reads on the structure recited in claim 20; the first plate 12 reads on the claimed shim plate, the second on the claimed “separately formed cover plate”. Note that they are sealingly joined at the periphery. The raised walls 19 of one plate read on the claimed “flow circuiting baffle wall”, and the mating wall of the other plate reads on the claimed “first rib”.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 3, 5, 6, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. in view of Savage.

Fischer et al. show (Figs 6-8 embodiment) a structure which meets the recitations of claim 1, with the possible exception of the “integral” characterization of the first and second end and side walls extending from the shim and cover plates. Either of the plates 12, 13 reads on the claimed shim plate, with the corresponding opposed cover plate 16 or 17 reading on the claimed “cover plate”. The sides of frame 18, formed of channel shaped members 19, 20 welded or otherwise secured to the plates 12, 13, and to the cover plates 17, 18 (see Fig. 9), read on the claimed end and side walls. Generally, it has been held that the term “integral” is broad enough to include “constituent parts . . . so united as to constitute a unitary whole”. Further, even if the term “integral” is not so broadly construed as to encompass separately formed components joined by welding or other assembly techniques, the use of one piece construction as opposed to separate parts assembled would be a matter of obvious engineering choice.¹ Further, as shown by Savage, it is known in the art to form edge frames integrally with spaced plates that form a planar heat exchanger (see flanges 12, 13). Finally, Fischer et al. expressly suggest that “the frame [18] may be constructed in any other way than shown in Figs. 10-12” (lines 20-21 of page 2). Thus, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to form the frame by integrally forming bent flanges on any of the plates

¹ In re Larson et al., 144 U.S.P.Q. 347.

of Fischer et al. to provide the enclosing frame that seals off the flow passage defined between the plate assembly.

Regarding claim 3, although Fischer et al. indicate a preference for welding to join the plates, as Savage indicates, brazing is a well-known assembly method comparable to welding in its widespread use in heat exchanger construction. It would have been an obvious substitution of known equivalents to assemble the components of Fischer et al. by brazing. Regarding claim 5, the adjacent cover plate of Fischer et al. reads on the recited "support plate". Regarding claim 6, Savage teaches the provision of fins on an external face of a cooling pad. The function of such fins is notoriously well known in the art, in that they effectively increase the surface area exposed to the ambient. It would have been obvious to one of ordinary skill in the art at the time the instant invention was made to provide such fins on a surface of Fischer et al.'s cooling device to improve heat transfer to or from the external surfaces.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer et al. in view of Savage as applied to claim 1 above, and further in view of Berkowitz et al.

Berkowitz et al. show a heat exchanger that, like Fischer et al., provides a meandering flow pattern for heat exchange fluid within a flat plate construction. They teach the advantage of disrupting boundary layer flow in the fluid passage to enhance heat transfer, and one means of accomplishing

this is with a turbulizer inserted in the passage (Fig. 7). In view of this, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to insert a similar device in the heat exchanger of Fischer et al. to improve heat transfer efficiency.

Claims 2, 4, 7, 8, 10, 11, 13-19, 21, and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

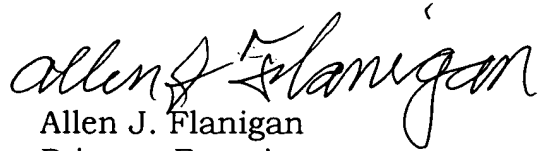
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The remaining references cited show various panel type heat exchanger designs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Allen J. Flanigan whose telephone number is (571) 272-4910. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Mancene can be reached on (571) 272-4930. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Allen J. Flanigan
Primary Examiner
Art Unit 3753

AJF